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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/624,553	07/23/2003	Nami Yasuoka	030894	7509
23850	7590	06/28/2004		
ARMSTRONG, KRATZ, QUINTOS, HANSON & BROOKS, LLP 1725 K STREET, NW SUITE 1000 WASHINGTON, DC 20006			EXAMINER SEFER, AHMED N	
			ART UNIT 2826	PAPER NUMBER

DATE MAILED: 06/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

9A

<b>Office Action Summary</b>	<b>Application No.</b> 10/624,553	<b>Applicant(s)</b> YASUOKA ET AL.	
	<b>Examiner</b> A. Sefer	<b>Art Unit</b> 2826	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 June 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) 12-21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>8/29/03</u> . | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Election/Restrictions***

1. Applicant's election without traverse of Group I (claims 1-11) in the reply filed on June 14, 2004 is acknowledged.

***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:  

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
3. Claims 7 and 8 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
4. Claims 7 and 8 recite the limitation "the ridge-shaped optical waveguide." There is insufficient antecedent basis for this limitation in the claims.
5. In claim 10, "Photodetectors have longer light absorption layer" is indefinite as it is not clear as to what it is longer than.
6. In claim 11, "gradually wider" is indefinite as it is not clear as to what it is wider than.

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1, 7 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Yasuoka US PG-Pub 2002/0003202.

Yasuoka discloses (figs. 2-6 and par. 0038) a semiconductor photodetecting device comprising a photodetector 20A formed on semiconductor substrate and directly connected to the core of the tapered optical waveguide (as in claim 7); and a tapered optical waveguide 26 formed on the semiconductor substrate and including tapered core layer which has film thickness continuously increased toward the photodetector or a tapered optical waveguide divided in a plurality of layers 26, 30 by the clad layer (as in claim 8), and an upper clad layer 20C which covers the upper surface and the side surface of the core layer and has film thickness continuously decreased toward the photodetector.

9. Claims 2-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Yasuoka US PG-Pub 2002/0003202.

Yasuoka discloses (figs. 2-6 and par. 0038) a semiconductor photodetecting device comprising a photodetector 20A formed on semiconductor substrate; and a tapered optical waveguide 26 formed on the semiconductor substrate and including tapered core layer which has film thickness continuously increased toward the photodetector, and an upper clad layer 20C which covers the upper surface and the side surface of the core layer and has film thickness continuously decreased toward the photodetector (as in claim 3); and a ridge-shaped optical wave guide 28 formed on the semiconductor substrate between the photodetector and the tapered optical waveguide and including a core layer and an upper clad layer selectively covering only the upper surface of the core layer.

As for claim 4, the specification contains no disclosure of either the critical nature of the

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claimed arrangement or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen dimensions or upon another variable recited in a claim, the applicant must show that the chosen dimensions are critical. In re Woodruff, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

As for claim 5, Yasuoka discloses (see pars. 0037-0039) number of layers forming the tapered optical waveguide is different from a number of layers forming the ridge-shaped optical wave-guide.

As for claim 6, Yasuoka discloses a layer 27/29 inserted in the upper clad layer of the ridge shaped optical waveguide and having etching characteristics different from those of the upper clad layer of the ridge optical shape-waveguide

### ***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 9-11, as understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Yasuoka in view of Marsland USPN 6,528,776.

Yasuoka discloses the device structure as recited in the claim including a photodetector having longer light absorption layer 22 as it is farther from the tapered optical wave guide (as in claim 10) or a width said of photodetector and a width said of optical waveguide gradually wider

from the tapered optical waveguide (as in claim 11), but does not disclose a plurality of photodetectors coupled by an optical waveguide.

Marsland discloses in figs. 1-3 a plurality the photodetectors 102, 104 and 106 optically coupled with each other by an optical waveguide 112.

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate the teachings of Marsland with Yasuoka's device since that would enhance its efficiency as taught by Marsland.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to A. Sefer whose telephone number is (571) 272-1921.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (571) 272-1915.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ANS  
June 22, 2004

**NATHAN J. FLYNN**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 2800**

